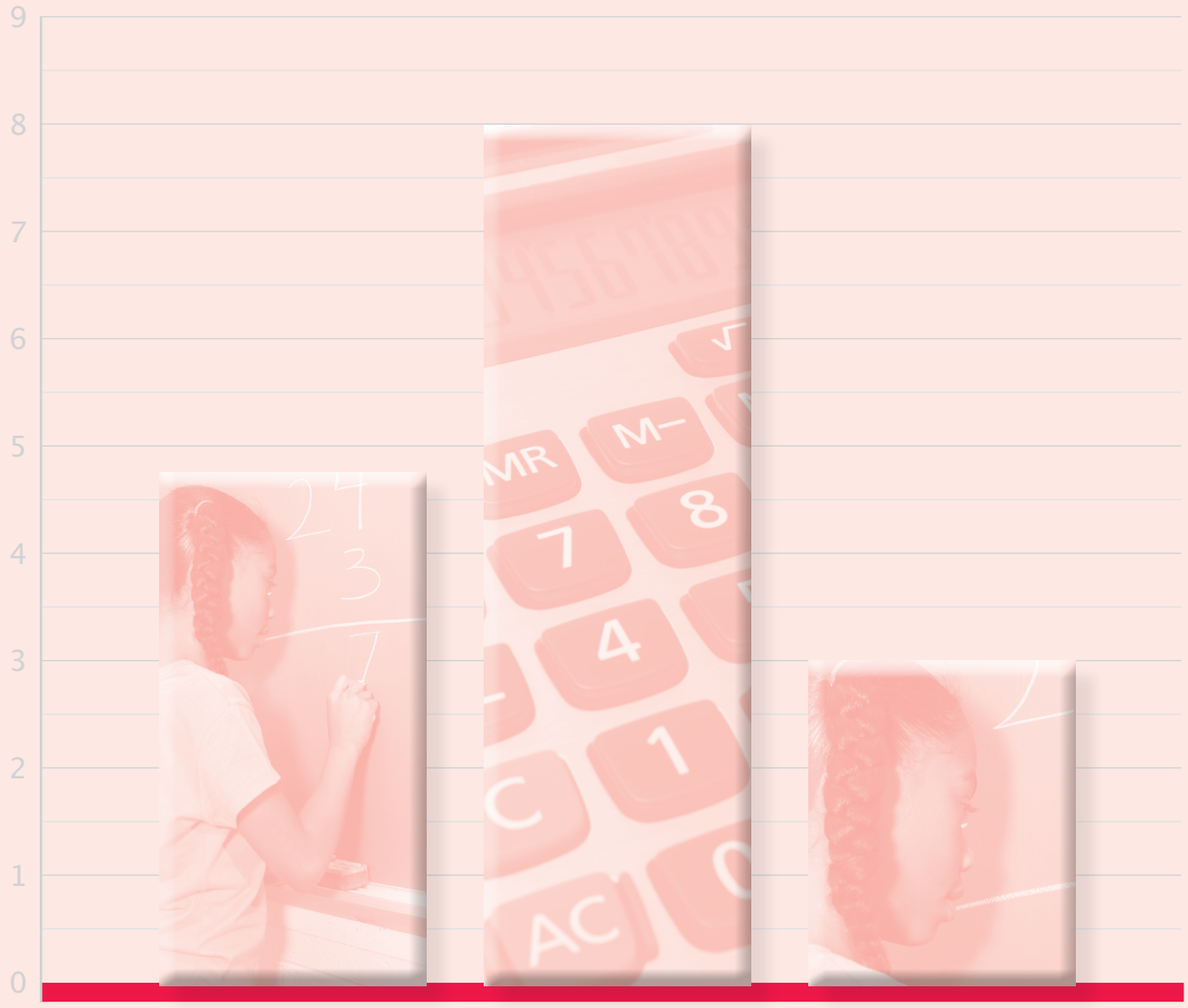
Grade 4

4th
5th
6th
7th
8th

meap™
Michigan Educational Assessment Program

Item Descriptors



MATHEMATICS

FALL 2012

MICHIGAN STATE BOARD OF EDUCATION
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NOTE: For each item listed throughout this booklet, the first statement is a summary of the Michigan Grade Level Content Expectation (GLCE) and the second statement is the descriptor for the item's stem or question.

Portions of this work were previously published.

Printed in the United States of America.

Students were instructed to read the directions below silently as the test administrator read them aloud.

PART 1

DIRECTIONS:

In this part, you will answer multiple-choice mathematics questions. Some questions will ask you to view a picture, chart, or other mathematics-related information. Use that information with what you know to answer the question. You may **NOT** use a calculator for this part of the test.

You must mark all of your answers in Part 1 of your **Answer Document** with a No. 2 pencil. You may underline, circle, or write in this test booklet to help you, but nothing marked in this test booklet will be scored. No additional paper may be used.

Mark only one answer for each question. Completely fill in the corresponding circle on your **Answer Document**. If you erase an answer, be sure to erase completely. Remember that if you skip a question in the test booklet, you need to skip the answer space for that question on the **Answer Document**. If you are not sure of an answer, mark your **best** choice.

A sample question is provided for you below.

Sample Multiple-Choice Question:

Marty wants to put 75 CDs into cases. Each case holds exactly 8 CDs. What is the **least** number of cases that Marty will need to hold all his CDs?

A 8

B 9

C 10

D 11

For this sample question, the correct answer is **C**. Circle **C** is filled in for the sample question on your **Answer Document**.

Once you have reached the word **STOP** in your test booklet, do **NOT** go on to the next page. If you finish early, you may go back and check your work in Part 1 of the test **ONLY**. Check to make sure that you have answered every question. Do **NOT** look at any other part of the test.

NOTE: The directions for Part 2 are the same as the above instructions, but with calculators allowed.

1 **N.ME.03.01:** Read and write numbers to 10,000 in both numerals and words, and relate them to the quantities they represent, e.g., relate numeral or written word to a display of dots or objects.

Translate word form of number into standard form.

A omitted hundreds

B omitted tens

C correct

D incorrect values in tens and ones place

2 **N.ME.03.01:** Read and write numbers to 10,000 in both numerals and words, and relate them to the quantities they represent, e.g., relate numeral or written word to a display of dots or objects.

Translate standard form of number into word form.

A incorrect values in tens and hundreds place

B correct

C incorrect value in thousands place

D incorrect values in tens, hundreds and thousands place

3 **N.ME.03.02:** Identify the place value of a digit in a number, e.g., in 3,241, 2 is in the hundreds place. Recognize and use expanded notation for numbers using place value through 9,999, e.g., 2,517 is 2000 + 500 + 10 + 7; 4 hundreds and 2 ones is 402.

Translate standard form of number into expanded form.

A a,bcd = ab thousands + 0 hundreds + 0 tens + cd ones

B a,bcd = a0 thousands + 0 hundreds + 0 tens + cd ones

C correct

D a,bcd = a thousands + bc hundreds + d tens + 0 ones

4 **N.ME.03.02:** Identify the place value of a digit in a number, e.g., in 3,241, 2 is in the hundreds place. Recognize and use expanded notation for numbers using place value through 9,999, e.g., 2,517 is 2000 + 500 + 10 + 7; 4 hundreds and 2 ones is 402.

Translate standard form of number into expanded form.

A a,bcd = a + b + c + d

B a,bcd = a,000 + b0 + cd

C a,bcd = a,000 + b00 + c + d

D correct

5 **N.ME.03.03:** Compare and order numbers up to 10,000.

Identify correct inequality.

A incorrect comparison

B incorrect comparison

C incorrect comparison

D correct

6 **N.ME.03.03:** Compare and order numbers up to 10,000.

List four 4-digit numbers from least to greatest.

A mixed order

B correct

C mixed order

D mixed order

7 **N.ME.03.05:** Know that even numbers end in 0, 2, 4, 6, or 8; name a whole number quantity that can be shared in two equal groups or grouped into pairs with no remainders; recognize even numbers as multiples of 2. Know that odd numbers end in 1, 3, 5, 7, or 9. Work with patterns involving even and odd numbers.

Determine next three numbers in skip-counting pattern.

A skip counted by 1, not 2

B skip counted by 2, then by 1

C correct

D skip counted by 2, then by 4

8 **N.ME.03.05:** Know that even numbers end in 0, 2, 4, 6, or 8; name a whole number quantity that can be shared in two equal groups or grouped into pairs with no remainders; recognize even numbers as multiples of 2. Know that odd numbers end in 1, 3, 5, 7, or 9. Work with patterns involving even and odd numbers.

Identify even 3-digit number.

A odd

B correct

C odd

D odd

9 **M.UN.03.04:** Know benchmark temperatures such as freezing (32 degrees F, 0 degrees C); boiling (212 degrees F, 100 degrees C); and compare temperatures to these, e.g., cooler, warmer.

Identify temperature in Celsius between the freezing and boiling point of water.

A below freezing point of water

B correct

C above freezing point of water

D above freezing point of water

10 **N.FL.03.06:** Add and subtract fluently two numbers through 999 with regrouping and through 9,999 without regrouping.

Subtract two 3-digit numbers.

A incorrect in tens place

B correct

C subtracted smaller values from larger values

D incorrect in tens place

11 **N.FL.03.06:** Add and subtract fluently two numbers through 999 with regrouping and through 9,999 without regrouping.

Subtract two 2-digit numbers.

A added

B 10 over

C subtracted smaller values from larger values

D correct

12 **N.FL.03.07:** Estimate the sum and difference of two numbers with three digits (sums up to 1,000), and judge reasonableness of estimates.

Estimate sum of two 3-digit numbers.

A underestimate

B underestimate

C correct

D overestimate

13 N.MR.03.09: Use multiplication and division fact families to understand the inverse relationship of these two operations, e.g., because 3 x 8 = 24, we know that 24 divided by 8 = 3 or 24 divided by 3 = 8; express a multiplication statement as an equivalent division statement.

Identify fourth fact in multiplication/division family.

A addition fact

B addition fact

C correct

D division fact from different family

14 N.MR.03.09: Use multiplication and division fact families to understand the inverse relationship of these two operations, e.g., because 3 x 8 = 24, we know that 24 divided by 8 = 3 or 24 divided by 3 = 8; express a multiplication statement as an equivalent division statement.

Determine missing number in fact family.

A correct

B not member of fact family

C not member of fact family

D not member of fact family

15 N.MR.03.10: Recognize situations that can be solved using multiplication and division including finding "How many groups?" and "How many in a group?" and write mathematical statements to represent those situations.

Select division as operation for solving problem in context.

A addition

B correct

C multiplication

D subtraction

16 N.MR.03.10: Recognize situations that can be solved using multiplication and division including finding "How many groups?" and "How many in a group?" and write mathematical statements to represent those situations.

Given a contextualized situation, identify corresponding division number sentence.

A multiplication number sentence

B correct

C subtraction number sentence

D addition number sentence

17 N.FL.03.11: Find products fluently up to 10 x 10; find related quotients using multiplication and division relationships.

Multiply two 1-digit numbers.

A added

B incorrect product

C incorrect product

D correct

18 N.FL.03.11: Find products fluently up to 10 x 10; find related quotients using multiplication and division relationships.

Multiply two 1-digit numbers.

A added

B incorrect product

C correct

D incorrect product

19 N.ME.03.16: Understand that fractions may represent a portion of a whole unit that has been partitioned into parts of equal area or length; use the terms "numerator" and "denominator."

Given fraction strip, identify shaded portion.

A ratio of shaded portion to non-shaded portion

B ratio of non-shaded portion to shaded portion

C non-shaded area

D correct

20 N.ME.03.16: Understand that fractions may represent a portion of a whole unit that has been partitioned into parts of equal area or length; use the terms "numerator" and "denominator."

Identify fraction that matches context.

A reciprocal

B complement

C twice the correct value

D correct

21 N.ME.03.17: Recognize, name, and use equivalent fractions with denominators 2, 4, and 8, using strips as area models.

Identify fraction strip with equivalent shading to given fraction strip.

A correct

B fraction strip with more shading

C fraction strip with more shading

D fraction strip with more shading

22 N.ME.03.17: Recognize, name, and use equivalent fractions with denominators 2, 4, and 8, using strips as area models.

Identify fraction strip with equivalent shading to given fraction strip.

A complement

B fraction strip with less shading

C fraction strip with less shading

D correct

23 N.ME.03.01: Read and write numbers to 10,000 in both numerals and words, and relate them to the quantities they represent, e.g., relate numeral or written word to a display of dots or objects.

Translate word form of number into standard form.

A did not include hundreds

B correct

C converted "one thousand" to 10,000

D a,bcd = a,000,b00,0cd

24 N.ME.03.18: Place fractions with denominators of 2, 4, and 8 on the number line; relate the number line to a ruler; compare and order up to three fractions with denominators 2, 4, and 8.

Identify a point on the number line.

A counted backward from nearest whole number

B correct

C incorrect use of scale

D incorrect point

25 **G.GS.03.04:** Identify, describe, compare, and classify two-dimensional shapes, e.g., parallelogram, trapezoid, circle, rectangle, square, and rhombus, based on their component parts (angles, sides, vertices, line segment) and the number of sides and vertices.

Identify quadrilateral.

A correct

B not quadrilateral

C not quadrilateral

D not quadrilateral

26 **G.GS.03.06:** Identify, describe, build and classify familiar three-dimensional solids, e.g., cube, rectangular prism, sphere, pyramid, cone, based on their component parts (faces, surfaces, bases, edges, vertices).

Identify 3-D shape with given characteristics.

A incorrect 3-D shape

B correct

C incorrect 3-D shape

D incorrect 3-D shape

27 **G.GS.03.04:** Identify, describe, compare, and classify two-dimensional shapes, e.g., parallelogram, trapezoid, circle, rectangle, square, and rhombus, based on their component parts (angles, sides, vertices, line segment) and the number of sides and vertices.

Identify 2-D shape given characteristics.

A incorrect shape

B correct

C incorrect shape

D incorrect shape

28 **G.SR.03.05:** Compose and decompose triangles and rectangles to form other familiar two-dimensional shapes, e.g., form a rectangle using two congruent right triangles, or decompose a parallelogram into a rectangle and two right triangles.

Identify name of 2-D shape composed of two named 2-D shapes.

A incorrect 2-D shape

B correct

C incorrect 2-D shape

D 3-D shape

29 G.SR.03.05: Compose and decompose triangles and rectangles to form other familiar two-dimensional shapes, e.g., form a rectangle using two congruent right triangles, or decompose a parallelogram into a rectangle and two right triangles.

Identify name of 2-D shape composed of two named 2-D shapes.

A incorrect 2-D shape

B incorrect 2-D shape

C incorrect 2-D shape

D correct

30 G.GS.03.06: Identify, describe, build and classify familiar three-dimensional solids, e.g., cube, rectangular prism, sphere, pyramid, cone, based on their component parts (faces, surfaces, bases, edges, vertices).

Identify total number of faces on 3-D shape.

A fewer than total number of faces

B correct

C greater than total number of faces

D greater than total number of faces

31 G.GS.03.06: Identify, describe, build and classify familiar three-dimensional solids, e.g., cube, rectangular prism, sphere, pyramid, cone, based on their component parts (faces, surfaces, bases, edges, vertices).

Identify 3-D shape given 3 clues.

A incorrect 3-D shape

B incorrect 3-D shape

C correct

D 2-shape

32 G.GS.03.04: Identify, describe, compare, and classify two-dimensional shapes, e.g., parallelogram, trapezoid, circle, rectangle, square, and rhombus, based on their component parts (angles, sides, vertices, line segment) and the number of sides and vertices.

Identify 2-D shape.

A correct

B incorrect shape

C incorrect shape

D incorrect shape

33 D.RE.03.01: Read and interpret bar graphs in both horizontal and vertical forms.

Interpret bar graph.

A incorrect difference

B correct

C incorrect difference

D minuend

34 D.RE.03.02: Read scales on the axes and identify the maximum, minimum, and range of values in a bar graph.

Find maximum of the data in a bar graph.

A minimum

B neither maximum nor minimum

C correct

D greatest value on axis

35 D.RE.03.02: Read scales on the axes and identify the maximum, minimum, and range of values in a bar graph.

Find the minimum of the data in a bar graph.

A neither maximum nor minimum

B neither maximum nor minimum

C maximum

D correct

36 M.UN.03.06: Use square units in calculating area by covering the region and counting the number of square units.

Find area in square centimeters of square.

A length of one side

B length of two sides

C length of three sides

D correct

37 M.UN.03.07: Distinguish between units of length and area, and choose a unit appropriate in the context.

Identify unit of measure for area.

A unit of length

B unit of length

C correct

D unit of volume

38 M.UN.03.04: Know benchmark temperatures such as freezing (32 degrees F, 0 degrees C); boiling (212 degrees F, 100 degrees C); and compare temperatures to these, e.g., cooler, warmer.

Identify Fahrenheit temperature closest to freezing temperature of water.

A closest temperaure for Celsius

B incorrect temperature

C incorrect temperature

D correct

39 M.UN.03.07: Distinguish between units of length and area, and choose a unit appropriate in the context.

Identify the unit of length.

A unit of mass

B unit of volume

C unit of volume

D correct

40 M.UN.03.06: Use square units in calculating area by covering the region and counting the number of square units.

Find area in square units of triangle on grid.

A half of correct area

B correct

C incorrect area

D twice the correct area

41 M.UN.03.07: Distinguish between units of length and area, and choose a unit appropriate in the context.

Choose appropriate measurement for length of given object.

A correct

B unrealistically long

C area

D area

42 M.UN.03.01: Know and use common units of measurements in length, weight, and time.

Convert feet to inches.

A 1 foot = 3 inches

B 1 foot = 6 inches

C 1 foot = 10 inches

D correct

43 M.UN.03.05: Know the definition of area and perimeter and calculate the perimeter of a square and rectangle given whole number side lengths.

Determine perimeter of rectangle given its width and length.

A length + width

B length + length

C correct

D length x width

44 M.UN.03.02: Measure in mixed units within the same measurement system for length, weight, and time: feet and inches, meters and centimeters, kilograms and grams, pounds and ounces, liters and milliliters, hours and minutes, minutes and seconds, years and months.

Convert kilograms to grams.

A 1 kg = 0.1 gm

B 1 kg = 10 gm

C 1 kg = 100 gm

D correct

45 M.UN.03.03: Understand relationships between sizes of standard units, e.g., feet and inches, meters and centimeters.

Identify shortest distance.

A neither shortest nor longest distance

B neither shortest nor longest distance

C longest distance

D correct

46 M.UN.03.05: Know the definition of area and perimeter and calculate the perimeter of a square and rectangle given whole number side lengths.

Determine perimeter of square given side length.

A length of six sides

B area

C correct

D length of two sides

47 M.UN.03.05: Know the definition of area and perimeter and calculate the perimeter of a square and rectangle given whole number side lengths.

Identify rectangle with given perimeter.

A perimeter = length + width

B correct

C perimeter = length + width

D perimeter = length + width

48 M.PS.03.10: Add and subtract lengths, weights, and times using mixed units, within the same measurement system.

Add with inches in context.

A incorrect difference

B subtracted

C correct

D 1 foot = 10 inches

49 M.PS.03.11: Add and subtract money in dollars and cents.

Add money given in decimal notation.

A incorrect sum

B correct

C under by $1

D incorrect sum

50 M.PS.03.12: Solve applied problems involving money, length, and time.

Multiply (or use repeated addition) in context.

A divided

B added

C correct

D ab × c = abc

51 M.PS.03.12: Solve applied problems involving money, length, and time.

Add money given in decimal notation in context.

A under by $1

B did not include one of the items

C correct

D incorrect total

52 M.PS.03.11: Add and subtract money in dollars and cents.

Subtract money in decimal notation.

A did not subtract in tens place

B subtracted smaller values from larger values in tenths and hundredths places, did not subtract in tens place

C subtracted smaller values from larger values

D correct

53 M.PS.03.12: Solve applied problems involving money, length, and time.

Add measurements in feet and inches in context.

A subtracted inches but not feet

B incorrect difference

C correct

D over by 1 inch

54 N.MR.03.12: Find solutions to open sentences, such as 7 x box = 42 or 12 divided by box = 4, using the inverse relationship between multiplication and division.

Calculate for divisor in number sentence.

A added

B subtracted

C incorrect divisor

D correct

55 N.MR.03.15: Given problems that use any one of the four operations with appropriate numbers, represent with objects, words, (including "product" and "quotient"), and mathematical statements; solve.

Divide (or use repeated subtraction) in context.

A correct

B incorrect quotient

C incorrect quotient

D dividend minus divisor

56 N.MR.03.15: Given problems that use any one of the four operations with appropriate numbers, represent with objects, words, (including "product" and "quotient"), and mathematical statements; solve.

Identify division as way to solve a contextualized problem.

A addition

B subtraction

C multiplication

D correct

57 N.MR.03.15: Given problems that use any one of the four operations with appropriate numbers, represent with objects, words, (including "product" and "quotient"), and mathematical statements; solve.

Subtract two 3-digit numbers in context.

A correct

B over by 100

C subtracted smaller values from larger values

D added instead of subtracted

58 D.RE.03.03: Solve problems using information in bar graphs, including comparison of bar graphs.

Interpret bar graphs.

A incorrect difference

B incorrect difference

C correct

D incorrect difference

59 D.RE.03.03: Solve problems using information in bar graphs, including comparison of bar graphs.

Interpret bar graphs.

A total, but from different category

B incorrect total

C total, but from different category

D correct

4th

5th

6th

7th

8th

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